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PROJECT COMPLETION REPORT

KOREA

SEOUL URBAN TRANSPORTATION PROJECT

(LOAN 2514-KO)

JUNE 30, 1993

MICROGRAPHICS

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Type: PCR

Infrastructure Operations Division
Country Department I
East Asia and Pacific Regional Office

CURRENCY EQUIVALENT

US$ 1	= W 790 (February 1993)
US$ 0.001	= W 1
US$ 1 million	= W 790 million
US$ 1336.0	= W 1 million

FISCAL YEAR

January 1 - December 31

WEIGHTS AND MEASURES

1 meter (m) = 3 2808 feet (ft)
1 kilometer (km) = 0.62 miles (mi)
1 square kilometer (km2)= 0.3861 square miles (sq.mi)
1 hectare (ha) = 0.01 km2 = 2.4711 acres (ac)
1 metric ton (m ton) = 2.2046226 pounds (lbs)
= 1.1023 short tons (sh tons or 2000 lbs)
= 0.9842 long tons (lg tons or 2240 lbs)

PRINCIPAL ABBREVIATIONS AND ACRONYMS

CBD	-	Central Business District
EIRR	-	Economic Internal Rate of Return
GNP	-	Gross National Product
ICB	-	International Competitive Bidding
KHB	-	Korea Housing Bank
KLDC	-	Korea Land Development Corporation
KNHC	-	Korea National Housing Corporation
KNR	-	Korean National Railroad
LCB	-	Local Competitive Bidding
NHF	-	National Housing Fund
SMG	-	Seoul Metropolitan Government
TPD	-	Traffic Police Department
TSM	-	Transport System Management

THE WORLD BANK
Washington, D.C. 20433
U.S.A.

Office of Director-General
Operations Evaluation

June 30, 1993

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Project Completion Report on Korea
Seoul Urban Transportation Project (Loan 2514-KO)

Attached is the "Project Completion Report on Korea - Seoul Urban Transportation Project (Loan 2514-KO)," jointly prepared by the Infrastructure Division of the Asia Technical Department and the Infrastructure Operations Division of the East Asia and Pacific Regional Office and the Borrower.

The project achieved its objectives concerning the construction of urban transport infrastructure and the introduction of Transport System Management (TSM) techniques. Although the project was successfully completed, it had to be re-shaped in order to accommodate traffic decrease along specific corridors and protests from communities that needed to be resettled. The project demonstrates that institution building in urban transport is a slow process and requires training and new management techniques. It also shows the need to integrate prevention against the negative social impacts of land acquisition in project design and preparation. These lessons are valuable in the context of Korea's growing needs for urban transport management.

On balance, the project outcome is rated as satisfactory, its institutional development impact as partial (due to its limited impact on broader sectoral objectives), and the sustainability of its policy approach as uncertain due to the persistent lags between urban transport improvements and continued increases in traffic.

The PCR is of good quality with the exception of the economic rate of return analysis which lacks substantiation. No audit is planned.

Attachment

PROJECT COMPLETION REPORT
KOREA
SEOUL URBAN TRANSPORTATION PROJECT
(Loan 2514-KO)

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PROJECT COMPLETION REPORT
KOREA
SEOUL URBAN TRANSPORTATION PROJECT
(Loan 2514-KO)

PREFACE

This is the Project Completion Report (PCR) for the Seoul Urban Transportation Project in Korea, for which Loan 2514-KO, in the amount of US$ 53.0 million equivalent was approved on May 17, 1985. The loan was extended from June 30, 1990 to June 30, 1992, and final disbursement was made on December 14, 1992, which refers to the recovery of the special account. Disbursements under the loan totaled US$ 24,601,084.68 million, with final disbursement made on July 30, 1991. US$ 24.4 million were canceled effective January 23, 1987. US$ 4,155,915.32, cost savings and undisbursed balance, was canceled effective January 5, 1993 when the loan account was closed.

The PCR was jointly prepared by the Infrastructure Division of the Asia Technical Department (ASTIN), the Infrastructure Operations Division (EA1IN) of the East Asia and Pacific Regional Office and the Borrower, and is based, inter alia, on the Staff Appraisal Report (SAR), the Loan Agreement, supervision reports, the Borrowers own records, correspondence between the Bank and the Borrower, and internal Bank memoranda.

PROJECT COMPLETION REPORT
KOREA
SEOUL URBAN TRANSPORTATION PROJECT
(Loan 2514-KO)

EVALUATION SUMMARY

Objectives

The main project objectives include the construction of urban transport infrastructure as well as the introduction of Transport System Management (TSM) techniques along selected transport corridors and in the Central Business District (CBD) of Seoul Special City. In addition, the project aims to preserve and strengthen public transport and promote institutional development, specifically of the Seoul Metropolitan Government (SMG) and the Traffic Police Department (TPD).

Implementation Experience

Due to a number of factors including traffic decrease along specific corridors, assistance from developers to finance roadworks and vociferous protests from individuals faced with resettlement, the project was amended and certain elements downsized in 1987 (major roadworks and interchange investments). However, the re-shaped project was successfully completed with the TSM component expanded, beyond the project scope, to other areas in Seoul and indeed other cities in Korea.

Sustainability

With dramatic and continued increases in traffic in Seoul, the civil works components are expected to yield benefits in excess of original estimates. However, although the TSM concept has been well received and is duplicated in many other areas, the beneficial impact, although significant after implementation, has in many cases been shorter lived than originally expected due to the continued and constant increases in traffic volumes.

Findings and Lessons Learned

The main findings and lessons learned from the Seoul Urban Transportation Project include the following:

(a) The concept of TSM has been successfully introduced into Korea. Although it remains in its infancy due to limited professional expertise and the tendency for public agencies to emphasize capital investment, there

is a growing appreciation of the positive impact of TSM strategies.

(b) Institution building in urban transport is a slow and on-going exercise involving many elements which includes training, the purchase of new equipment, the introduction of new management techniques and organizational restructuring, in order to realize full potential benefits. With recognition of the importance of management and policy reforms, Korean cities are becoming poised for a new era of urban transport management.

(c) Environmental issues, in particular community disruption resulting from land acquisition, was much underrated by the government and did in fact directly impact the construction of a number of components. In the future more care will need to be taken in judging the impact of resettlement, and arrangements for land acquisition begun far in advance of project work so that construction schedules are not unduly disrupted.

(d) There is a preference to use domestic resources for project components when domestic funds are available. The Bank's comparative advantage lies in the introduction of new and innovative ideas. This was apparent with government support of the TSM component, and withdrawal of a number of the civil works components.

PROJECT COMPLETION REPORT
KOREA
SEOUL URBAN TRANSPORTATION PROJECT
(Loan 2514-KO)

PART I: BANK'S REVIEW

1. Summary Project Data

Project Name : Seoul Urban Transportation Project
Loan Number : 2514-KO

RVP Unit : East Asia	Loan Amount	: US$ 53.0M
Country : Korea	Canceled Amount	: US$ 28.4M
Sector : Transport	Disbursed Amount	: US$ 24.6M
Subsector : Urban Transport		

Approval Date : 5/17/85 Staff Appraisal: July 1984
Effective Date : 7/5/85 Number of Extensions: Two
Original Closing Date : 6/30/90
Amended Closing Date: 6/30/92 Total Project Cost: US$127.4M

Appraisal ERR : 41% Re-assessed ERR : 35%

2. Background and Sectoral Information

2.1 In 1984, when the Seoul Urban Transportation Project was appraised, the population of Korea was 40 million. GNP growth had averaged at about 10% annually throughout the decade and 8.5% since 1964. Two decades of rapid economic growth had brought Korean per capita income to US$ 2000 by mid-1984. This, coupled with the changing structure of the economy resulted in a population shift from rural to urban, with over 60% of Koreans living in urban areas. While overall population growth in the 1980s declined to under 1.5% per annum, urban population continued to increase at more than 5% annually. A number of large cities emerged, with Seoul being by far the largest in the country at about 9 million inhabitants.

2.2 In 1991, Korea was still expanding and growing economically. The remainder of the 1980s saw a continuing GNP growth of about 10% annually. Overall population growth, estimated at 43 million in 1991, had declined to about 1.0% per year. Urban growth, although slowing, still registered an annual increase of 3%, and income levels had risen dramatically to US$ 5400. With increased prosperity came a slow but rapidly rising growth in the number of privately owned automobiles. Between 1983-1988 there was a 24% annual growth nationally, and a 35% growth in Seoul and its immediately surrounding area (the Kyonggi Region). In 1991 alone there were about 540 new cars registered per day in Seoul, accounting for over one-fourth of the national average (2100 per day). Although car registration in Seoul decreased to 14% between 1991 and 1992, it has remained very high both nationally (25%) and regionally (35%). Associated

with this growth in automobiles had also come a significant rise in traffic accidents. In 1982 over 6000 persons were killed on the roads and another 130,000 injured, giving Korea the dubious distinction of having the third highest rate of deaths per 1000 vehicles among 36 developing countries. The estimated cost to the Korean economy amounted to over 1% of annual GNP.

2.3 During the 1970s and 1980s Korea's rapid economic growth, coupled with increased levels of disposable income, which spawned a higher number of trips, trained the transport system. Massive public sector investments in transport infrastructure were made to support this growth with the government continuing to allocate a sizable proportion of its total capital expenditure to expand and modernize transport infrastructure (about 15% annually during the years 1982-1991). The basic objective of government intervention in transport in the 1980s was to increase and modernize the capacity of the transport system nationally, to accommodate projected traffic growth and avoid major bottlenecks. This was coupled with the objective to encourage development of new industrial areas and housing complexes outside of the Seoul city center.

2.4 In the years immediately preceding the Bank project (1966-1984), substantial changes had occurred in the modal distribution of traffic. Transport by road had become predominant, with road capturing 40% of the freight traffic (rail 31%; coastal shipping 29%), and 73% of the passenger traffic (rail 25%).

Appraisal Context: Seoul

2.5 As of December 1991, 24.5% of the total national population of 43 million people, lived in Seoul, which only occupies .61% of the entire territory of the country. Per capita income in the city had increased from US$2,600 in 1985 to almost US$ 6,500 by 1991. The increased income levels coupled with the city's dense population naturally led to housing shortages and traffic congestion. Problems were augmented by: a population and functional concentration of activity in the city center; roads historically radially structured towards the CBD; narrow streets; increased number of vehicles; and a significant increase in travel population. The results culminated in a 42% increase in traffic accidents between 1983 and 1988. In the period between 1983 and 1988 the number of person-trips had risen from 15 million to 18.5 million. By 1991 it had risen to 25.1 million. Although the share of car passenger traffic had doubled since the early 1980s, in 1991 it remained at a modest 14% of total passenger trips, with buses continuing to dominate transport in the city at 41% (declining from a high of 64% in 1983). Travel by subways and the railroad increased from 9% to 17% in the same time period (para.2.8).

Appraisal Context: Kyonggi Region

2.6 Seoul's growth has been at the center of the debate on spatial development strategy. Various actions have been taken to restrict and re-direct its growth including the establishment of a greenbelt in the 1970s, strict land-use planning, and the division of the capital region into a spectrum of zones ranging from dispersal to promotional. These efforts have spread the city continuously southward. Today, the areas open for expansion lie in the far south of Kyonggi Province at distances between 30-50 km from the city.

2.7 The Kyonggi Region, located in the northwestern part of the country, includes three provincial-level administrative units including Seoul City, Inchon City (the country's second largest seaport with a population of 2 million in 1991), and Kyonggi-Do Province (which encircles Seoul and Inchon and includes the two busiest transport corridors, namely the Seoul-Inchon Corridor and the Seoul-Pyongtaek section of the Seoul-Pusan Corridor). Kyonggi Region is also highly industrialized, consistently generating about 40% of the national GNP with Seoul alone accounting for about 70%. The concentration of population and economic activity in the Region has resulted in an explosive demand for transport infrastructure and services.

The Transport System

2.8 Transport in Seoul is composed of both road and rail. The emphasis of the road construction program in the 1980s was towards circumferential road projects and the improvement of cross-city links along the northern and southern banks of the Han River. The major short-term focus was to eliminate bottlenecks, build and improve major arterials of regional importance, and provide access to the eastern portion of the south bank for the 1988 Olympics and the many new apartment complexes which were being built. Although the 1980s saw a significant increase in private vehicles, Seoul residents remained major users of the public transport system (para.2.5). In 1983, of the estimated 15 million daily trips by mechanical modes, about 64% were by bus, 17% by taxis, 9% by car and others and 10% by rail/subway. In 1988 of the 18.5 million daily trips, 51% were taken by bus, 16% by taxis, 17% car and others and 17% by rail/subway. The subway system expanded significantly over the last decade from 22.1 kms in 1980 to 118 kms in 1991. In 1982 one of the major concerns of the government was to integrate the public transport facilities of bus and rail transit as fully as possible, and avoid severe congestion in the CBD.

2.9 Between 1982 and 1991, Seoul and its Region has grown dramatically, both in population and economic activity. The

result has been a continued strain on the transport network, with travel time in the CBD decreasing from 30.8 km/hr in 1980 to 18.6 km/hr in 1989, and 17.6 km/hr in 1991. However, in 1992, the trend appears to have been somewhat reversed with the average speed increasing to 19.3 km/hr. This is attributed to the limitations placed on car entry into the CBD (February 1992). Despite the construction of satellite cities (including Bundang, Ilsan, Kwacheon and Sang-gae with a total projected population of over 1 million), and improvement of access roads, these routes are heavily used and unable to keep up with demand. About 35% of the passenger traffic in the region either originates or is destined for Seoul. The situation is similar for freight traffic, where a high proportion moves not only across Seoul's boundaries but also circumferentially outside the city. To accommodate this traffic there are presently two ring-roads within Seoul, with a third under construction (completion expected by 2001).

Transport Planning

2.10 Housing, water supply and sewerage, urban transport and general infrastructure were the primary focus of the Government's urban development strategy throughout the 1980s, with housing and transport among the top priorities. To deal with rapid growth in Seoul and the Kyonggi Region, two specific regional development plans were prepared in the early 1980's and have both been updated to bring the Region into the 21st century. The first, referred to as the Comprehensive Physical National Development Plan, has focused on relieving congestion in and around Seoul by introducing appropriate traffic management. The second plan, sometimes referred to as the Seoul Growth Management Plan, has focused on facilitating economic development with its prime emphasis on the construction of satellite cities (para.2.9), and improvements in expressways, rail lines and highways in and around Seoul, mainly to relieve population density and traffic congestion in the city.

3. Previous Bank Involvement

3.1 Since 1979, the Bank has made eight loans in support of urban development projects, two land development and low-income housing projects, three regional development projects and three water supply projects. All were designed to support significant policy and institutional changes. The Bank focus in the urban sector in Korea has been housing. Initially, the Bank concentrated on the introduction of new approaches to the provision of low-income housing to its individual clients, the Korea Housing Bank (KHC), the National Housing Fund (NHF), the Korea Land Development Corporation (KLDC) and the Korea National Housing Corporation (KNHC). Subsequently the Bank strategy has been elevated to encompass sector-wide concerns and policies

which link the performance of the housing sector to the rest of the economy, with Bank support for urban development coinciding closely with the Government's emphasis on urbanization, industrial development and energy conservation.

3.2 In other areas of infrastructure investment, the Bank has been significantly involved in the highway subsector, having approved loans for six highway projects totaling US$ 690 million. One of these loans, the Kyonggi Regional Transport Project specifically focused on elimination of bottlenecks in and around Seoul by financing portions of Seoul's third ring road (the Pangyo-Kuri and Shingal-Ansan sections), encouraging coordinated transport planning in the region, and supporting a traffic management study in specific urban areas around Seoul. Similarly, a number of projects in the rail subsector also touched on transport issues related to Seoul, specifically the Fourth and Fifth Railway Projects (Loans 863-KO and 1101-KO), which included completion of the electrification program for lines connecting Seoul with the North-Eastern part of Korea, as well as those KNR lines in the Seoul suburban areas.

4. Follow-on Initiatives

4.1 The Pusan Urban transport Management Project is only project presently planned by the Bank in the urban transport subsector. In September 1991 a Bank mission did appraise a Railroad Systems Modernization Project which had as its main component support of the expansion of the Seoul suburban passenger service. However, due to Bank's concern regarding restructuring of the railroad, the project has been indefinitely postponed.

5. The Project

Objectives

5.1 The main objectives of the project include not only the construction of urban transport infrastructure but also the promotion of more capable and better coordinated urban transport institutions. Specifically the objectives include:

(a) improvement of the transportation system in Seoul through a comprehensive set of investments and programs such as: (i) improvements to major intersections; (ii) the construction and widening of strategic road links; and (iii) the introduction and application of Transport System Management (TSM) techniques along selected transport corridors and in the CBD;

(b) preservation and strengthening of the public transport system by: (i) introducing bus priority measures; and (ii) promoting the integration of the bus and subway systems; and

(c) promotion of institutional development by strengthening the capabilities of the Seoul Metropolitan Government (SMG) and the Traffic Police Department (TPD) to plan, implement and evaluate traffic and safety improvements.

Description

5.2 The project included the following four principal components:

1. Major Road Investments on three main routes: (a) construction of a missing link in the Western Arterial from Sihung to the Kyong-In Expressway to form an effective western distributor and bypass to the CBD (10.84 Kms); (b) widening and upgrading of the Eastern Arterial between Euijeongbu in the northeast and Seongnam in the southeast (8.7 kms) to provide improved access and CBD bypass; and (c) upgrade of the existing North Han River Road between the Hannam and Jamsil Bridges (8.4 kms).

2. Major Intersection Improvements including; (a) the construction of a grade-separated interchange between the Eastern Arterial and the North Han Riverside Road at the Yeong Dong Interchange; (b) conversion of an existing rotary into a fully grade-separated interchange at Yeongdeungpo; and (c) rebuilding of the Gilum Interchange to facilitate traffic movements westward onto the Ring Road.

3. TSM and Safety Programs: composed of a four-year program of TSM measures along about 17 major traffic corridors and in the CBD, including junction improvements, one-way streets, channelization, markings, signaling, bus bays and priority lanes, selective road widening, and the introduction of pedestrian facilities such as safety islands and controlled crossings. In addition there is also a city wide remedial program of accident prevention which includes the introduction of safety measures at about 200-300 hazardous locations through investments recommended by the accident investigation and analysis system to be introduced as part of the institutional development of Traffic Police Department (TPD).

4. Institutional Development: to support technical assistance, training, studies and a limited amount of equipment to improve both the content and process of urban transport administration in Seoul City. The focus included two main agencies, SMG and the Seoul TPD.

Design and Organization

5.3 At the time of appraisal it was determined that Korean agencies had become well experienced in general civil works but remained weak in planning and coordinating a system of investments. Therefore the rationale for the project was to promote institutional development in order to strengthen planning capability and to introduce traffic management concepts and practices. The Seoul Metropolitan Government (SMG) became the executing agency for the project. The Project Management and Evaluation Bureau of SMG had the overall responsibility of overseeing the project, with the Transportation and Construction Management Bureaus as well as the Office of Construction and Engineering, and the Traffic Police Department directly involved in its implementation. The Construction Bureau together with the Office of Construction and Engineering were responsible for the major road investments and intersection improvements with the Construction Bureau also involved in the design of the major works in the TSM Program. The Transportation Bureau retained virtual total responsibility for the TSM Program and shared responsibility for the implementation of the Safety Program, with the Traffic Police Department. Project implementation began in 1985 and was completed in 1991. At the time of appraisal, it was intended that project implementation would take four years, instead it took seven.

Revisions and Amendments

5.4 In 1987 adjustments were made to the Bank loan due to the cancellation of a number of project components including; the upgrading of the North Han Riverside Road; the Nowon-Gongdae Road; the Yeong Dong Interchange; and the Gilum Interchange. Work on the Gilum Interchange was scaled down and a smaller version of the component shifted for inclusion in the TSM Program. A new road, the Seongsan Dong-Jungsan Dong route was included in the project as a substitute. In addition six more corridors and 2 areas (including Gilum and Yeongdeungpo) were added to the TSM component. A total of US$ 24.23 million was canceled.

5.5 In 1990 an adjustment was made to the TSM Program. Due to exchange rate savings, a total of US$ 5.19 million was transferred from the TSM to the Seongsan Dong-Jungsan Dong Road component of the Bank project to finance a shortfall in civil works. In January 1993, with the completion of the project, an additional US$ 4.2 million was canceled.

6. Project Implementation

Physical Works

6.1 Major Road Investments. As noted in para.5.4 above, there were some major changes made to the project in 1987, which resulted in the cancellation of two of the road components. The first, the North Han Riverside Road, whose objective was to upgrade a portion of the existing route and thus relieve some of the congestion on the road, was canceled due to a decrease in traffic. The reason for this is that with the completion of the Olympic Expressway (1982-1988), much of the traffic which had been using the North Han Riverside Road dispersed. In response to this occurrence, the government lowered its priority for upgrading this route and postponed work to a future date. The second road canceled was the Nowon-Gongdae Road component. The reason for this cancellation was that sufficient domestic funds had been mobilized which enabled the government to carry out the project locally. The construction of a new housing development at Sang-gae (1986-90 for about 150,000 people), adjacent to the project route, allowed the Korea Housing Corporation (KHC), which oversaw the development and collected the developer's contribution to infrastructure upgrading in the area, to collect sufficient capital to upgrade the Nowon-Gongdae Road without the use of Bank funds. The construction of the Seongsan Dong-Jungsan Dong portion of the western arterial road was substituted for the above two cancellations. With its construction, much of the traffic which was forced to travel through the CBD to move from one end of the western arterial to the other, could now bypass the city center.

6.2 Major Intersection Improvements. Two of the major interchange improvements appraised under this project were also canceled. The first, cancellation of the construction of a grade separated interchange at Yeongdeungpo, was in part due to concerns that construction was not timely as it would occur during the Olympic Games of 1988, causing unnecessary congestion and disruption of traffic in areas affected by the games' activities. It was instead included in the TSM Program as a temporary solution. The other cancellation was the Gilum Interchange. The main reason for its cancellation concerns difficulties encountered with land acquisition and resettlement. Local residents simply opposed the project to such an extent that it was dropped.

6.3 Transport System Management (TSM) and Safety Programs. Implementation of both of these components was achieved without issue. All sub-components were successfully completed. As noted in paras.5.4 and 5.5 there were a number of additions made to the TSM component in 1987. Also because there were some exchange rate savings in this program US$ 5.19 million was transferred

from TSM to the civil works component in order to facilitate the completion of the Seongsan Dong-Jungsan Dong Road.

6.4 Two TSM monitoring studies have been completed during project implementation. These included a before and after analysis on both the TSM and safety components. The first study (Seoul City Public Transport System Improvement Study), which was prepared by the Korea Institute of Transport Studies, included 12 of the TSM corridors and was completed in July of 1989. Four of the remaining corridors were monitored and analyzed by the Traffic Management Institute of SMG (established in 1989). This study was completed in 1991.

Procurement

6.4 Procurement experience under this project concerned:

(a) Civil Works. Due to the down scoping of the entire project, noted in para.5.4 above, the number of contracts for major civil works declined from the appraisal estimate of about ten to five. The five resultant contracts totaling about 40 billion Won were tendered and awarded in conformance with the Bank's Guidelines on International Competitive Bidding (ICB) and were financed under the Bank Loan. The smaller civil works contracts dealing with the TSM and safety improvements were implemented over the entire project period on the basis of Local Competitive Bidding (LCB), in accordance with procedures which were acceptable to the Bank. The procedures and documentation on procurement were handled properly by SMG. Most works were satisfactorily completed with some delays encountered in the construction of the new road and western arterial, mainly caused by problems of land acquisition and revisions in the design of the new road alignment (construction of an underpass in place of a viaduct).

(b) Consulting Services. Construction supervision of civil works was carried out by SMG with the assistance of local consultants fully financed by SMG. Three consultants provided advice and review functions for the major civil works. Similarly, for TSM and safety improvement works, the Korea Advanced Institute of Science & Technology and other local firms assisted the SMG staff. The performance of both SMG and the consultants in the supervision of the civil works was satisfactory.

Disbursement

6.5 The disbursement rate, in general, was slow throughout the project and stayed very low in the early stage of implementation (1985-87), before the down scoping of the project from the original loan amount of $53 to $28.8 million. Two major civil works representing almost 20% of project cost, the North Han Riverside Road and the Gilum Interchange, were postponed but later substituted by the construction of a new link for the western arterial road, the Seongsan Dong-Jungsan Dong portion. Moreover, SMG became reluctant to draw upon loan funds when domestic funds were available with actual bid amounts lower than estimated costs. Following the cancellation of US$ 24.2 million in January 1987, disbursement improved but remained lower than expected because of delays and increase in land acquisition and construction costs of the two major remaining civil works components. The project was amended for the second time in December 1990 in response to the request for reallocation of funds between project components and extension of project closing date. The project closing date was extended twice and finally, was closed on June 30, 1992 with about $4.15 million loan amount left unutilized, which was canceled on January 3, 1993.

6.6 Overall, disbursement represented 19.4% ($24.6 million) of total revised costs ($127.4 million). The disbursement percentage for civil works as provided for in the Loan Agreement was 40% of total costs of the civil works financed by the Bank. The costs of consultancy services and land acquisition were entirely defrayed by the Borrower.

7. Project Results and Lessons Learned

Project Results

7.1 The civil works component of the project was altered extensively. This was due to a number of reasons including decreased traffic levels (North Han Riverside Road), preference to use domestic funds (Nowon-Gongdae Road), fears of potential impact on traffic generated by the Olympic Games (Yeongdeungpo Rotary), and problems with land acquisition and compensation which resulted in component down scaling (Gilum Interchange). Included in their stead was the construction of the Seongsan Dong-Jungsan Dong Road. Completion of the remaining physical targets including the Seongsan Dong-Jungsan Dong Road were, however, met successfully. In the interim, it has become apparent that those components withdrawn from the project have been or will shortly need to be included in the government's own investment program due to renewed urgency. For example, in the case of the North Han Riverside Road, following the end of the Olympic Games, traffic on the road increased to such an extent

that its upgrading became a government priority. As a result construction began in 1989 using domestic funds, with completion planned for the end of 1993. A similar situation has arisen with respect to both the Gilum and Yeongdeungpo Interchanges. In the case of the former, the component was down scaled and included in the TSM Program but with the magnitude of the traffic, success was limited. Anticipating the need for future works the city continued to purchase land for purposes of future construction of the interchange as originally planned. Land acquisition is now almost complete and the government expects to begin construction in either 1994 or 1995. In the case of the Yeongdeungpo Interchange, although it was also included in the TSM Program, success was likewise minimal due to the magnitude of the traffic increase. Although no detailed plans have yet been prepared, the government has acknowledged the need for a new facility and has begun to prepare plans for future implementation.

7.2 The developmental objectives of the TSM program were achieved beyond appraisal expectation. This was the Bank's first urban transport project in Korea which emphasized the introduction of TSM. The concept included a comprehensive approach to enhancing the effectiveness of the existing road and public transport network with a minimum of investment. Overall, this component has been an overwhelming success even though the impact of some TSM projects may have been short-lived due to extremely rapid traffic growth. All physical targets have been exceeded with even more implemented than originally planned. In addition all safety improvement schemes have also been implemented. Productivity improvements have been realized by both bus operators and bus users with the opening of bus lanes along major corridors. The two project implementing agencies, SMG and TPD, have embraced the approaches of TSM and road safety improvement as integral features of their transport sector strategies. The TSM concept has also gradually spread from Seoul to other large cities and over the years, expertise in design and implementation of TSM schemes, particularly among local consultants and central government institutions (e.g., Korea Transport Institute), has grown. The 1985 Urban Transportation Act, which requires cities with populations over 300,000 population to develop short and long range transportation investment plans and traffic impact studies for major developments, offers evidence of the Korean Government's commitment to improved planning and coordination of urban transport through the implementation of TSM practices. The monitoring studies conducted indicate the extent of the impacts of both the TSM and safety components, with visible improvements seen in all seventeen of the corridors which include three business areas and about 600 intersections. Although in many cases full benefits have been short-lived due to rapid traffic growth, the passenger carrying capacity of all project corridors have increased.

7.3 However, due to the lack of experience of SMG in TSM, and consequently their lack of confidence in making radical proposals, there have been some design shortcomings in TSM schemes implemented under the project. To some extent emphasis has been on physical improvements of roads and intersections (road signs and markings, channelization, installation of signals, pedestrian walkways, bus lane marking and signs, etc.) with limited integration of these improvements with operations planning (integrated traffic circulation plan, parking management, platoon type operations of bus in bus lanes, etc.), tactical planning (bus priority schemes, enforcement of traffic regulation, auto restraint policies, etc.) and strategic planning (land use and transport relationships), the three important components of any comprehensive TSM scheme. The importance of interagency linkages, a necessity for enhancing efficient use of road space through TSM strategies, was also in some cases either not fully understood or avoided to minimize the hurdles of coordination and enforcement by various agencies (such as police, private bus operators and various bureaus of SMG).

7.4 To support the implementation and continuity of these practices the TSM section of the Transportation Planning Division (under Transportation Bureau) and Traffic Division of Police Administration in SMG have been strengthened through training, technical assistance and purchase of equipment. The notion of treating transportation in an integrated fashion covering large continuous geographic area with a mix of strategies has gradually replaced past practices of isolated treatment of problems. In this respect the project has fully served its key objective. Over time TSM practices would mature in complexity and their importance further realized with experience.

7.5 Nonetheless, considering the magnitude and complexity of Seoul City's traffic problems, the existing TSM section needs to be further strengthened to effectively manage, design and monitor TSM and demand management programs. However, since the SMG tends to contract out TSM related works to consultants, the need for strengthening in-house capability is not fully realized. Moreover, there is generally an acute shortage of experienced transportation professionals particularly with TSM and transportation planning skills because individuals with this kind of knowledge and expertise are difficult to retain. With the recent approval of the Local Autonomy Act (1988), urban district offices have gained significant independence in revenue generation, administration, planning, and implementation of projects. This has amplified the need for coordinated planning, design, and continuous monitoring in the central office.

Environment

7.6 The most pressing environmental issue confronting the project concerned the acquisition of land and resettlement of affected residents. The project planners underestimated the degree of public opposition to land acquisition. Although it quickly became evident that land prices had risen, in most instances residents were prepared to sell, given the appropriate incentive. Delays occurred due to prolonged negotiations (from 1 to 3 years) as opposed to the one year which was planned at appraisal. In the case of the Gilum Interchange, the component was dropped from the project because of the government's inability to purchase all of the required land in a timely fashion. In other situations court decisions respecting the appropriate value of land lingered longer than anticipated. No data on the extent of resettlement was available to determine the magnitude of community disruption.

Economic Analysis

7.7 The project undoubtedly improved the transport and traffic conditions in Seoul City. The various investments included in the project were aimed at reducing traffic congestion, improving speeds and reducing travel times. This has to a large extent been achieved through street expansions and widenings and the construction of important links. The benefits quantified at appraisal remain justifiable. Although Vehicle Operating Costs (VOC) savings have not altered appreciably since appraisal, income levels of the Korean population have increased substantially. The time savings attributable to the project have therefore also increased, with the resultant post-appraisal EIRRs somewhat different from that projected by the appraisal team. The re-calculated project EIRR is 35%. It was estimated at 41% during appraisal. The reason for the lower EIRR is due mainly to the cancellation the North Han River Side Road which had a particularly high appraisal estimate (57%). The breakdown of the rates of return are as follows:

	Appraisal EIRR	Post-Appraisal EIRR
Nowon-Gondae	18%	-
North Han River Side Rd	57%	-
Suseo-Segok	30%	34%
Kyong-In-Sihung	31%	35%
Seongsan-Jungsan	-	30%
Yeong Dong Interchange	47%	41%
Overall EIRR	41%	35%

7.8 Although a comparative economic analysis for the project, appraisal and post evaluation was prepared, it was difficult. The reason is that even though the SAR did include some details on the methodology used and basic assumptions made, neither the appraisal report nor the project files offered sufficient information for such an analysis. There were significant gaps in data on traffic (actual and projected), economic costs (annual and by major investment category), and treatment of quantified economic benefits during the life of the project, to conduct a thorough post evaluative analysis. In addition, no record was available on the economic evaluation of the Seoungsan-Jungsan Road component in project files.

Findings and Lessons Learned

7.9 The following outlines the main findings and lessons learned from the Bank's involvement in the Seoul Urban Transport Project:

(a) The concept of TSM was successfully introduced in Seoul. Although it remains in its infancy because of limited professional expertise and the tendency of public agencies to emphasize capital investment, there is a growing appreciation of the positive impact of TSM strategies. In fact a total of eight additional areas in Seoul have already been selected for TSM improvements.

(b) Institution building in the urban transport sector is a slow and on-going process. The benefits of training, organizational restructuring, new equipment and introduction of new management practices need time to catch hold. With the gradual growth in local training opportunities and recognition of management and policy reforms as important to emerging urban transport issues, Korean cities are becoming poised for a new era of urban transport management.

(c) At the stage of project preparation environmental issues, in particular community disruption associated with land acquisition, must be identified along with a comprehensive mitigation plan. This is essential in order to minimize the risks of project delays and cost escalation. In fast growing urban areas such as Seoul, the potential of delays linked with land acquisition is extremely high due to rapid escalation in land prices and community opposition. Land acquisition needs to be initiated at the very early stage of project implementation and an appropriate strategy for public participation developed.

(d) Commitment by the government is key to project success, particularly in the case of innovative concepts or policy reform. This has been true with respect to the introduction of TSM under this project.

(e) There is a preference to use domestic resources for project components when domestic funds are available. Of the three civil works components which were canceled, all have been or are in the process of being reinstated with financing from local sources. The Bank's comparative advantage in Korea lies mainly in the introduction of those components with limited expertise or knowledge internally, such as was the case with the TSM component in the project.

8. Sustainability/Remaining Issues

8.1 With traffic ever increasing, it is expected that the major roadworks and interchange investments will maintain or even exceed the forecast level of net benefits throughout their economic life. The final success of the construction component will depend on continued growth of the Korean economy, providing a spur to traffic growth. In the case of the TSM component the carrying capacity of all TSM project corridors has increased substantially. The only limitation is that the benefits may be visible for a shorter period of time than originally anticipated due to continued rapid traffic growth.

8.2 Remaining issues include:

(a) continued growth of traffic into the CBD due to the development of satellite cities around Seoul with limited local employment opportunities and few transport options.

(b) although the success of TSM is undisputed, continued government priority on capital construction, including roads and rail/subway, will continue to make traffic management options less attractive.

(c) traffic accidents continue to climb. Some progress has been made through improved signing, increased safety facilities, imposition of more severe penalties for violations, and improvements in driver testing.

9. Bank Performance

9.1 Bank performance was very good throughout the project cycle. The Bank provided a continuity of involvement with a minimum of staff changes. In addition supervision was regular and appropriately staffed. The Bank also proved flexible with

respect to the project, quickly incorporating changes as requested by the executing agency to allow for a successful completion of the project.

10. Borrower Performance

10.1 The Borrower and its executing/implementing agencies, which included the Project Management and Evaluation Bureau, Construction Management and Transportation Bureaus, Office of Construction and Engineering and the Traffic Police Department which were all part of the Seoul Metropolitan Government, performed well during the project. They eased the task of project preparation and performed well during project implementation.

11. Project Relationships

11.1 The excellent relationship that has existed between the staffs of the Borrower and the Bank has contributed to the success of the project. It created good teamwork, in which each party displayed flexibility to allow for the successful achievement of the end goals. This was especially evident when significant changes in project scope needed to be initiated. These were accomplished with a minimum of problem and in a timely fashion.

12. Project Documentation and Data

12.1 The covenants contained in the Loan Agreement were reasonable and the Borrower complied with them. In addition, the staff appraisal report provided a useful reference framework during project implementation. However, with respect to post-appraisal economic analysis, incomplete documentation either in the files or in the SAR itself has made it very difficult to re-assess the benefits comparatively. In the future, SARs should as a matter of course include enough tabular information, including cost and benefit streams and travel projections to allow for a meaningful and comprehensive post evaluation analysis.

12.2 The Bank's documentation of the project after appraisal has also been inadequate. There are relatively few entries, little correspondence and minimal information in supervision reports. In fact there are very few supervision reports.

12.3 Finally, the project documentation and data available by the Borrower has also been poor. Although some information has been kept, the government habit to destroy all "non-essential" information related to project work, after the regulated five year period has left the files void of much of the substantive data required for a comprehensive post evaluation by the Bank.

PROJECT COMPLETION REPORT
KOREA
SEOUL URBAN TRANSPORTATION PROJECT
(Loan 2514-KO)

PART II: BORROWER'S EVALUATION

A. Conditions Leading to the Project

This project was first discussed with the government in 1980. Rapidly increasing automobile ownership, the need to integrate the subways with the road transport system, and the need to better connect the satellite cities to Seoul meant that transport was entering a critical stage. The Bank's emphasis on the necessity to address not only traffic movement issues but also management of the system led to the inclusion of both the civil works and TSM components. It took five years for the government and the Bank to agree on the appropriate structure of the project. By that time traffic in Seoul had exploded, the needs were so great and the financing limited, that the introduction of TSM was fully embraced.

B. Main Findings and Lessons Learned

The following includes findings and lessons which were identified by SMG:

(a) This was the first and only Bank urban transport project in Seoul, but it's impact has been felt nationwide. The introduction of TSM has allowed not only SMG but also other urban areas to improve traffic movement and address bottlenecks with a minimum of financial expenditure. The results have been noteworthy. Inchon, Pusan, Taegu and Kwangju have all begun to implement the measures of TSM. Moreover, the city of Seoul has identified an additional 8 areas (Cheongryangri, Shinchon, Mokdong, the CBD, Sanggye, Mia, Chamsil, and Chunho) in which it will introduce the concept by 1995.

(b) Traffic growth depends on many variables including the availability of convenient routes. As a result it is not always predictable, as was the case with the North Han Riverside Road. Traffic does however seek the shortest and quickest route, as has been discovered with the completion of the Seongsan Dong-Jungsan Dong Road, which has diverted some of the CBD traffic.

C. Summary of Bank Role and Performance

C.1 The overall success of the project can be attributed, in part, to the good performance by Bank staff during the whole project cycle. Supervision missions were sent to Korea on a regular basis, and staff changes were kept to a minimum, thus enabling good relationships to be built up over the project period. In addition project flexibility allowed quick response to changes in components when it was required.

D. Evaluation of Borrower's Own Performance

D.1 The Borrower and its implementing agency performed well during the project.

E. Remaining Issues

E.1 There are a number of issues which remain to be resolved in Seoul. The most pertinent concerns the attempt by government to change the travel patterns of those working in the CBD and requiring daily entry. With the continuing development of satellite cities, and the continuing influx of daily travelers from these cities to the CBD, the focus is on persuading travelers to change from using private vehicles to public transport.

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PART III: STATISTICAL INFORMATION

Table 1: RELATED BANK LOANS

Loan Title	Purpose	Approval	Status	Comments
Loan 2704-KO Urban Land Dev. Project	To increase the supply of serviced land by assisting Korea Land Dev. Corp.	May 1986	Completed	PCR issued on June 29, 1992
Loan 2801-KO Pusan Urban Management	To improve Pusan city's urban management and finance by strengthening project selection and investment planning, financial and managerial systems and by supporting priority investments and the balanced developments of the city.	April 1987	Completed	PCR issued on Dec. 18, 1991
Loan 2905-KO Kyunggi Regional Transport	To increase the efficiency of transport in the Kyunggi Region by physically improving the transport infrastructure in two specific corridors and by supporting the ongoing process of coordination of transport investment planning in the region.	Feb. 1988	Completed	PCR issued on Dec. 30, 1992
Loan 2908-KO Urban Transport (Taegu)	To increase the efficiency, capacity and safety of the existing transportation system in Taegu city through the introduction and application of TSM techniques and the construction of a major urban expressway with associated links.	Feb. 1988	Ongoing	
Loan 3061-KO Road Improvement	To increase transport capacity by supporting the upgrading of the surface and alignment of existing roads, by improving road maintenance and operations, by widening roads and increasing traffic safety.	May 1989	Ongoing	
Loan 3329-KO Housing Sector	To support the government's housing sector strategy by providing resources through the National Housing Fund for National Housing Fund for lower-income housing and by assisting the government in formulating a framework for housing policy development and an agenda for policy reform in the sector.	May 1989	Ongoing	

SEOUL URBAN TRANSPORT PROJECT

Table 2: BANK RESOURCES

A. Staff Input

Stage of Project Cycle	Number of Staffweeks
Through Appraisal	112.6 sw
Appraisal through Board Approval	58.9 sw
Supervision	35.5 sw
Project Completion Report	5.3 SW
Total	212.3 sw

B. Missions

Month/year	No. of persons	Days in field	Specialization	Performance rating	Type of problem
Preparation					
June 1980	4	10	ECO/TP/RA/CONS	n.a.	
Sept 1980	1	7	ECO	n.a.	
Oct 1991	6	21	ECO/TP/TE	n.a.	
Sept 1981	1	9	ECO	n.a.	
Jan 1982	1	5	ECO	n.a.	
June 1982	2	5	ECO/TE	n.a.	
Dec. 1982	4	13	ECO/HE/UP	n.a.	
Mar 1983	5	22	ECO/HE/UP	n.a.	
Feb 1984	5	21	HE/ECO/UP	n.a.	
Appraisal					
July 1984	4	20	ECO/HE/UP	n.a.	
Oct 1984	3	14	TE/CONS	n.a.	
Dec 1984	1	10	LO	n.a.	
Supervision					
Jan 1986	4	7	ECO/UP/HE/CONS	1	
Nov 1986	2	10	ECO/UP	1	
May 1987	1	3	UP		
Feb 1988	2	7	ECO	1	
Jan 1989	1	4	ECO		
Feb 1991	2	12	ECO/TE	1	
Sept 1991	2	13	FA/HE	1	
May 1992	2	10	ECO	1	
PCR					
Jan 1993	2	5	ECO		

CO	Economist	HE	Highway Engineer
TP	Transport Planner	TE	Transport Engineer
FA	Financial Analyst	RA	Research Assistant
UP	Urban Trans. Planner	LO	Loan Officer

SEOUL URBAN TRANSPORT PROJECT

Table 3: PROJECT COST - SUMMARY

	Appraisal Estimate (US$ mln)			Revised Estimate (US$ mln)			Actual (US$ mln)		
Item	Local cost	Foreign exchange costs	Total	Local Costs	Foreign exchange cost	Total	Local costs	Foreign exchange cost	Total
Major roads	56.5	31.9	88.4	25.6	18.0	43.0	37.5	17.4	54.9
Major interchanges	12.0	7.1	19.1	2.8	1.8	4.6	2.6	1.5	4.1
TSM & safety works	9.8	8.9	18.6	19.6	8.7	28.9	1.01	7.5	24.5
Land acquisition	47.3	0	47.3	43.6	0	43.6	43.7	0	43.7
Technical assistance & training	0.6	0.6	1.2	0	0.2	0.2	0	0.2	0.2
Base cost (end 1991 cost)	126.1	48.5	174.6	91.6	26.6	120.3	100.81	26.6	127.41
Physical contingencies	7.5	5.5	13.0	0	0	0	0	0	0
Price contingencies	8.6	8.4	17.0	0	0	0	0	0	0
Total Project Cost	142.2	62.4	204.6	91.6	26.6	120.3	100.81	26.6	127.4

SEOUL URBAN TRANSPORT PROJECT

Table 4: CUMULATIVE ESTIMATED AND ACTUAL DISBURSEMENTS
(US$ million)

IBRD Fiscal Year	Appraisal Estimate	Actual	Actual as % of Appraisal (%)
December 31, 1985	3.1	0.0	
June 30, 1986	6.9	4.0	58.0
December 31, 1986	12.3	4.0	32.5
June 30, 1987	19.2	6.5	33.9
December 31, 1987	27.7	9.1	32.9
June 30, 1988	37.6	9.8	26.1
December 31, 1988	43.8	11.7	26.7
June 30, 1989	48.4	15.7	32.4
December 31, 1989	51.5	19.1	37.1
June 30, 1990	53.0	19.1	36.0
December 31, 1990		22.9	43.2 /a
June 30, 1991		22.9	43.2 /a
September 30, 1991	24.6		46.4 /a

Note: US$24,243.00 was cancelled in January 1987, and the undisbursed balalnce of US$4,155.95 was cancelled in January 1993.

/a Cumulative disbursement as percentage of total loan amount.

Date of final disbursement: July 30, 1991

SEOUL URBAN TRANSPORT PROJECT

Table 5: STATUS OF COVENANTS

Section	Status	Description Covenant	Comments
3.01(a) Schedule 2	Compliance	The Borrower provide, as promptly as needed, the funds, facilities, services and other resources required for Schedule 2.	
3.02 Schedule 4	Compliance	Goods, works and consultants' services shall be governed by the provisions of Schedule 4.	
4.01(a)	Compliance	Maintain records and accounts in accordance with sound accounting practices.	
4.01(b) (i) (ii) (iii)	Compliance	Provide annual audit each September. SOE opinion needed.	
Schedule 1 para 3 (b)	Compliance	Feasibility Study on Part B(i) and (iii) before disbursement.	Completed 1986.
Schedule 5 para 1	Compliance	Furnish Bank with Monitoring and Quarterly Reports.	
Schedule 5 para 2	Not Compliance	Completion of Western Arterial.	Part of component deleted.
Schedule 5 para 3	Not Compliance	Completion Eastern Arterial.	Part of component deleted.
Schedule 5 para 4	Compliance	Staff up TSM Section.	
Schedule 5 para 5(a)	Compliance	TSM advisors to be appointed.	
Schedule 5 para 5 (b)	Compliance	Safety advisors to be appointed.	

SEOUL URBAN TRANSPORT PROJECT

Table 6: DETAILED PROJECT COST--ACTUAL
As of December 31, 1991

Project Components	Million Won				Million US$				Million Won									Date of Start and Completion
	Local	Foreign	Total	Base Cost (%)	Local	Foreign	Total	Foreign (%)	1984	1985	1986	1987	1988	1989	1990	1991	Total	
Major Road	26,169	13,320	39,489	40.2	36 2	17 4	53.6	32.5	-	453	4,833	7,341	12,753	8,567	1,270	4,272	39,489	
Eastern Arterial	1,637	834	2,471	2.5	2.8	1 0	3.8	38 5	-	240	2,231	-	-	-	-	-	2,471	
Susoo Dong - Segok Dong	1,637	834	2,471	2 5	2 8	1.0	3.8	38.5	-	240	2,231	-	-	-	-	-	2,471	11/18/85 12/22/86
Western Arterial Road	24,532	12,486	37,018	37 7	34 6	16.4	51 0	32.2	-	213	2,602	7,341	12,753	8,562	1,270	4,272	37,013	
Kyongin X-way-Sihung	14,315	7,934	22,249	22.7	20 0	10 0	30.0	33.3	-	213	2,602	7,341	11,235	858	-	-	22,249	11/18/85 05/31/89
Seongsan Dong-Jungsan Dong	10,217	4,552	14,769	15 0	14 5	6.4	21 0	30.5	-	-	-	-	1,518	7,709	1,270	4,272	14,769	10/24/87 09/05/91
Design and Supervision	945	-	945	1 0	1 3	-	1.3	0	1	162	196	20	315	146	105	-	945	
Major Interchanges	2,110	1,240	3,350	3 4	2 2	1.5	3.7	40 0	-	509	2,523	318	-	-	-	-	3,350	
Yeongdong	2,110	1,240	3,350	3 4	2 2	1.5	3.7	40 0	-	509	2,523	318	-	-	-	-	3,350	11/27/85 03/20/87
Design and Supervision	323	-	323	0 3	0.4	-	0.4	0	-	19	300	4	-	-	-	-	323	
TSM and Safety Works	11,994	5,401	17,395	17 7	15 5	7.4	22.9	32.3	-	346	328	2,070	3,132	617	4,115	6,787	17,395	
TSM (Corridor & CBD)	10,279	4,319	14,598	14.9	13.1	5.9	19.0	31.1	-	346	328	1,821	3,132	617	4,115	4,239	14,598	10/16/85 12/30/91
Safety	1,715	1,082	2,797	2.8	2.4	1.5	3.9	38.5	-	-	-	249	-	-	-	2,548	2,797	03/25/86 12/30/91
Design and Supervision	797	-	797	0 8	0.8	-	0 8	0	28	91	101	14	-	67	106	390	797	
Taxes and Duties Civil Works	557	-	557	0.6	0.7	-	0.7	0	-	-	-	-	-	-	-	557	557	
Equipment	-	75	75	0.1	-	0.1	0.1	100.0	-	-	27	9	29	9	1	-	75	
Taxes and Duties Equipment	7.1	-	7.1	-	0.01	-	0.01	0	-	-	2	1	3	1	0.1	-	7.1	
Land Acquisition	35,026	-	35,026	35.7	43.7	-	43.7	0	8,657	8,197	5,307	7,472	3,016	1,860	517	-	35,026	
Technical Assistance & Training	-	213	213	0.2	-	0.2	0.2	100.0	-	-	200	13	-	-	-	-	213	
Base Cost	77,928	20,249	98,177	100.0	100.81	26.6	127.41	20.9	8,686	9,777	18,817	17,262	19,248	11,267	6,114	12,006	98,177	
Physical Contingencies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Price Contingencies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

SEOUL URBAN TRANSPORT PROJECT

Table 7: PROJECT IMPLEMENTATION SCHEDULE - ACTUAL

Project Components	1985				1986				1987				1988				1989				1990				1991			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Major Roads																												
East Arterial																												
Seoul-Seguk																												
Nowon-Gongdae	Cancel																											
West Arterial																												
Kyungin-Sihung																												
Sungsan-Jeungsan																												
North Han River Road	Cancel																											
Major IC																												
Young Dong																												
Young Dang Po	Cancel																											
Gilum	Cancel																											
TSM																												
Road Safety																												

SEOUL URBAN TRANSPORT PROJECT

Table 8: INCOME AND EXPENDITURE, 1981-91
(Million Won)

	1981	1982	1983	1984		1985 /a		1986		1987		1988		1989	1990	1991 (Preliminary)
				Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.			
REVENUE	492,164	661,100	857,271	954,671	940,047	1,140,300	888,580	1,366,445	981,781	1,639,171	1,073,551	1,963,605	1,561,758	1,716,761	2,592,259	3,064,068
Local Tax	354,295	458,391	592,412	635,348		782,749		964,346		1,188,075		1,463,708		1,251,856	1,817,322	2,160,893
Nontax & Fees	101,812	154,547	224,643	279,648		313,206		350,790		392,885		440,032		438,675	736,915	863,504
Transfer from Govt.	24,342	27,922	20,845	19,643		20,625		21,656		22,739		23,876		23,336	35,017	37,673
Borrowing	11,715	20,240	19,371	20,032		23,720		29,652		35,472		35,989		2,894	3,005	1,998
EXPENDITURE	485,128	584,589	722,206	806,379	855,751	991,211	848,815	1,219,120	895,124	1,500,427	944,971	1,847,024	1,561,758	1,490,124	1,952,970	2,524,152
General	473,257	572,002	706,797	788,942	971,977		1,197,475		1,475,289		1,817,556			1,469,465	1,930,822	2,498,586
Debt Service	11,871	12,587	15,409	17,437		19,234		21,645		25,138		29,468		20,659	22,148	25,566
Net Income Before Borrowing	-4,679	56,271	115,694	128,260	84,296	125,369	39,765	117,673	86,657	103,272	28,580	80,591		226,637	639,289	537,918

Source: Seoul Statistical Yearbook (1991)

/a In 1985 the budget of the districts became independent (Act of Local Decentralization); this accounts for the lower actual figures.